REMARKS/ARGUMENTS

The Present Invention

The present invention is directed to a method of inhibiting the binding of a chaperone protein with its client protein or client polypeptide in a mammal by contacting a chaperone protein with a coumarin or coumarin derivative, wherein about 100 mg/kg of coumarin or coumain derivative is administered to a mammal at least once per day for about 5 days and, wherein the chaperone protein is heat shock protein (Hsp) 90.

The Pending Claims

Claims 1 and 3-17 are currently pending.

Amendments to the Claims

Claim 1 has been amended to recite that the inventive method consists essentially of the method step of administering to a mammal at least once per day for about 5 days, 100 mg/kg of coumarin or coumarin derivative to inhibit binding of a chaperone protein with its client protein in the mammal, wherein the chaperone protein is Hsp90. Support for the amendment to claim 1 can be found in the instant specification at, for example, page 16, lines 1-24 (Example 4). Claim 22 has been canceled. Accordingly, no new matter has been added by way of this amendment.

The Office Action

Claims 1, 8-15, and 22 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Omarbasha et al. (Cancer Res., 49, 3045-3049 (1989)) as evidenced by Prodromou et al. Claims 1, 3, 5-15 and 22 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Eder et al. (Cancer Res., 49, 595-598 (1989)) as evidenced by Prodromou et al. Claims 1, 3-6, 12-15, and 22 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Schneider et al. (Proc. Natl. Acad. Sci., 93: 14536-14541 (1996)) in view of Gormley et al.(Biochem.,35, 5083-5092 (1996)) and Prodromou et al.(Cell, 90, 65-75 (1997)). Claims 8-11 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Schneider et al., Gormley et al., Prodromou et al., and in further view of Schulte et al. (Biochem. and Biophys. Res. Comm.,239, 655-659 (1997)). Claims 16 and 17 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Schneider et al., Gormley et al., Prodromou et al. in further view of Hu et al. (Proc. Natl. Acad. Sci., 93: 1060-1064 (1996)).

Discussion of Rejection Under 35 U.S.C. § 102(b)

Claims 1, 8-15 and 22 have been rejected as allegedly anticipated by Omarbasha et al. as evidenced by Prodromou et al. The Office contends that Omarbasha et al. inherently discloses a method of inhibiting binding of Hsp90 with its client protein or client polypeptide, wherein the method comprises contacting Hsp90 with coumarin or a coumarin derivative, such that the coumarin or coumarin derivative binds Hsp90, which binding inhibits Hsp90 from binding its client protein or client polypeptide. Furthermore, the Office contends that the inhibition of binding between Hsp90 and a client polypeptide such as serine/threonine Raf-1, tyrosine kinase p185erbB2, and mutant p-53 is inherently disclosed in Omarbasha et al. The Office also alleges that Omarbasha et al. inherently discloses that a client protein or client polypeptide is inactive, and in some instances, degraded, subsequent to the binding of Hsp90 to coumarin or a coumarin derivative. Finally, the Office alleges that Omarbasha et al. inherently discloses that the binding of coumarin or a coumarin derivative to Hsp90 inhibits cellular proliferation, specifically in the context of cancer.

In an effort to advance prosecution and not in acquiescence of the rejection, claim 22 has been canceled, and claim 1 has been amended to recite that the inventive method consists essentially of contacting a chaperone protein with coumarin or a coumarin derivative, such that the coumarin or the coumarin derivative binds the chaperone protein, which binding inhibits the chaperone protein from binding its client protein or client polypeptide, wherein about 100 mg/kg of coumarin or coumain derivative is administered to a mammal at least once per day for about 5 days and, wherein the chaperone protein is heat shock protein (Hsp) 90 (as supported by the specification at, for example, page 16, lines 1-24 (Example 4)). Omarbasha et al. do not disclose administering about 100 mg/kg of coumarin or coumarin derivative to a mammal at least once per day for about 5 days. Accordingly, and in view of the amendment to claim 1, Applicants respectfully request that the rejection of claims 1, and 8-15 under Section 102, be withdrawn.

Claims 1, 3, 5-15 and 22 have been rejected as allegedly anticipated by Eder et al. The Office contends that Eder et al. inherently discloses a method of inhibiting binding of Hsp90 with its client protein or client polypeptide, wherein the method comprises contacting Hsp90 with coumarin or a coumarin derivative, such that the coumarin or a coumarin derivative binds Hsp90, which binding inhibits Hsp90 from binding its client protein or client polypeptide. Furthermore, Eder et al. is directed to the combinatorial treatment of novobiocin and alkylating agents to mice implanted with subcutaneous fibrosarcoma. The fact that Eder et al. discloses a method of administering novobiocin in conjunction with another compound precludes the very inference of inherency since it cannot be shown that by following Eder et al. the alkylating agent is not responsible for killing the tumor. Specifically, the alkylating agents in conjunction with novobiocin may be the cause of tumor killing. Nevertheless, in an

effort to advance prosecution and not in acquiescence of the rejection, claim 22 has been canceled, and claim 1 has been amended to recite that the inventive method consists essentially of contacting a chaperone protein with coumarin or a coumarin derivative, such that the coumarin or the coumarin derivative binds the chaperone protein, which binding inhibits the chaperone protein from binding its client protein or client polypeptide, wherein about 100 mg/kg of coumarin or coumain derivative is administered to a mammal at least once per day for about 5 days and, wherein the chaperone protein is heat shock protein (Hsp) 90 (as supported by the specification at, for example, page 16, lines 1-24 (Example 4)). Eder et al. do not disclose administering about 100 mg/kg of coumarin or coumarin derivative to a mammal at least once per day for about 5 days. Further, Claims 3, and 5-15 depend from claim 1. Accordingly, and in view of the amendment to claim 1, Applicants respectfully request that the rejection of claims 1, 3, and 5-15 under Section 102, be withdrawn.

Discussion of Rejection Under 35 U.S.C. § 103(a)

Claims 1, 3-6, 12-15, and 22 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Schneider et al. in view of Gormley et al. and Prodromou et al. The Office contends that Schneider et al. teaches a method of inhibiting the binding of heat shock protein Hsp90 with its client protein by contacting Hsp90 with geldanamycin, in vivo and in cell extract. The Office also contends that Prodromou et al. teaches that the binding site for geldanamycin on Hsp90 is the same as that of the ATP-binding site on Hsp90, and that Hsp90 is a chaperone for a wide range of client proteins, including client proteins involved in cell proliferation and tumor progression. Further, the Office contends that Gormley et al. teaches that the ATP-binding site of DNA gyrase B protein is the binding site for coumarin and coumarin derivatives, wherein such derivatives comprise chlorobiocin or coumermycin A1 and novobiocin. The Office concludes that one of ordinary skill in the art would have been motivated to combine the teachings of Schneider et al., Prodromou et al., and Gormley et al. to reach the claimed methods.

In an effort to advance prosecution and not in acquiescence of the rejection, claim 22 has been canceled, and claim 1 has been amended to recite that the inventive method consists essentially of contacting a chaperone protein with coumarin or a coumarin derivative, such that the coumarin or the coumarin derivative binds the chaperone protein, which binding inhibits the chaperone protein from binding its client protein or client polypeptide, wherein about 100 mg/kg of coumarin or coumain derivative is administered to a mammal at least once per day for about 5 days and, wherein the chaperone protein is heat shock protein (Hsp) 90 (as supported by the specification at, for example, page 16, lines 1-24 (Example 4)). Schneider et al. in view of Gormley et al. and Prodromou et al. do not teach or suggest all of the elements of claim 1 as amended. Further, Claims 3-6, and 12-15 depend from claim 1.

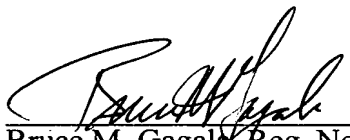
Accordingly, and in view of the amendment to claim 1, Applicants respectfully request that the rejection of claims 1, 3-6, and 12-15 under Section 103, be withdrawn.

Claims 8-11 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Schneider et al., Gormley et al., Prodromou et al., and in further view of Schulte et al. Further, claims 16-17 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Schneider et al., Gormley et al., Prodromou et al., and in further view of Hu et al. Neither Schulte et al. nor Hu et al. cure the deficiencies of Schneider et al., Gormley et al., Prodromou et al. in view of claim 1 as amended, from which claims 8-11 and 16-17 depend. Therefore, the subject matter of claims 8-11 and 16-17 would not have been obvious in view of the cited art. Accordingly, Applicants respectfully request that the rejection of claims 8-11 and 16-17 under Section 103, be withdrawn.

Conclusion

Applicants respectfully submit that the patent application is in condition for allowance. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



Bruce M. Gagala, Reg. No. 28,844
LEYDIG, VOIT & MAYER, LTD.
Two Prudential Plaza, Suite 4900
180 North Stetson Avenue
Chicago, Illinois 60601-6780
(312) 616-5600 (telephone)
(312) 616-5700 (facsimile)

Date: January 16, 2006